

FIG. 1 (PRIOR ART)

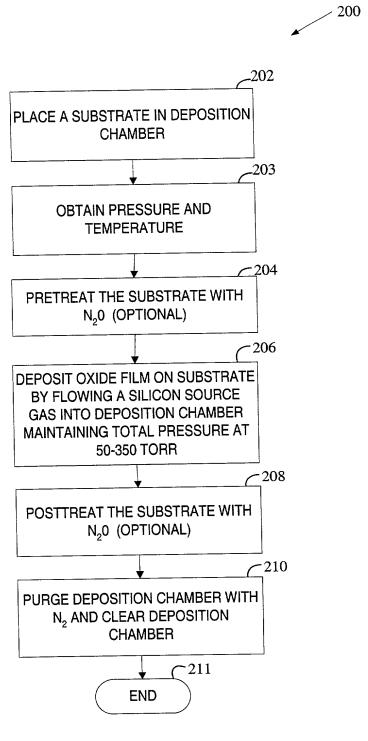


FIG. 2

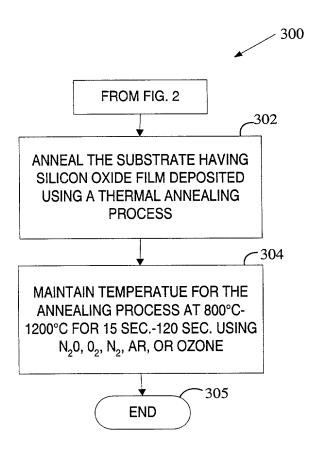


FIG. 3

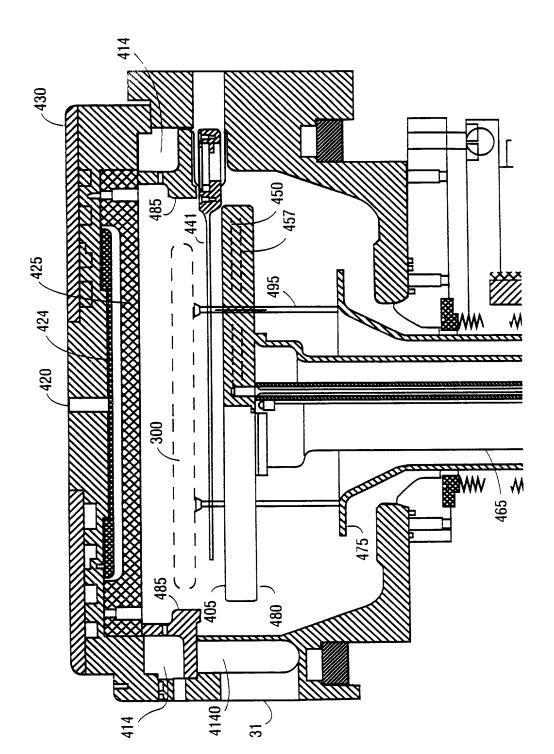


FIG. 5

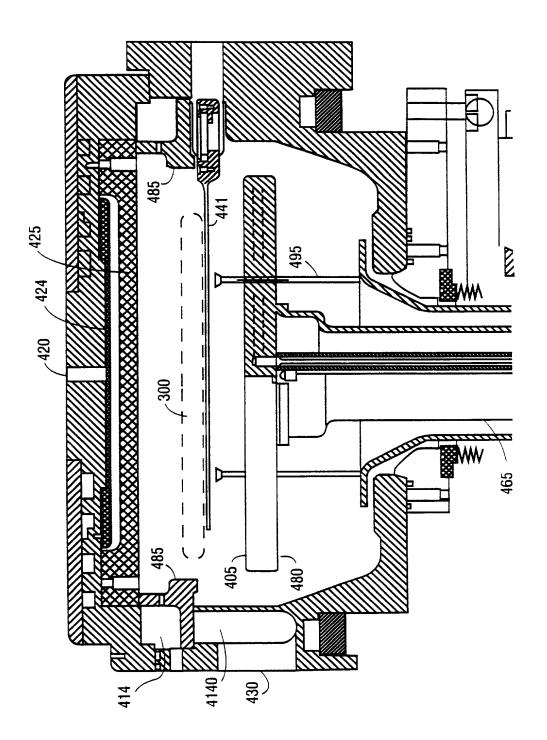


FIG. 6

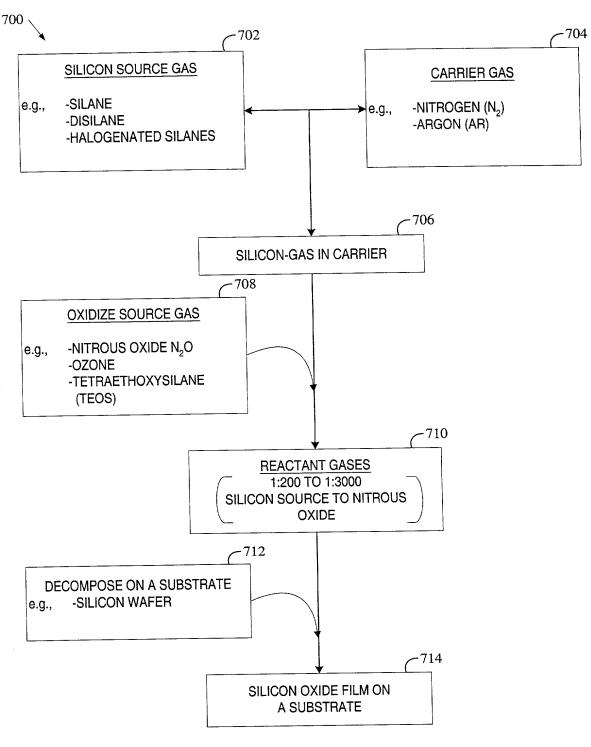


FIG. 7

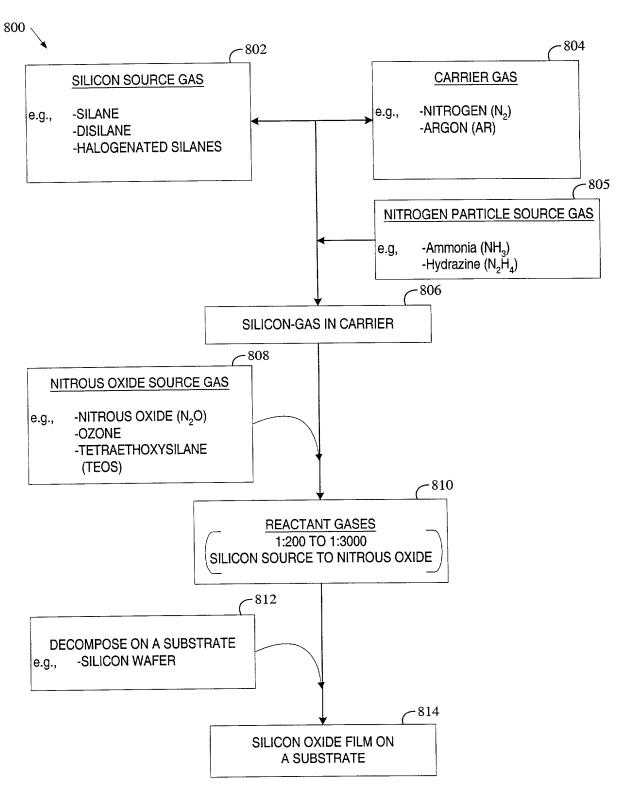
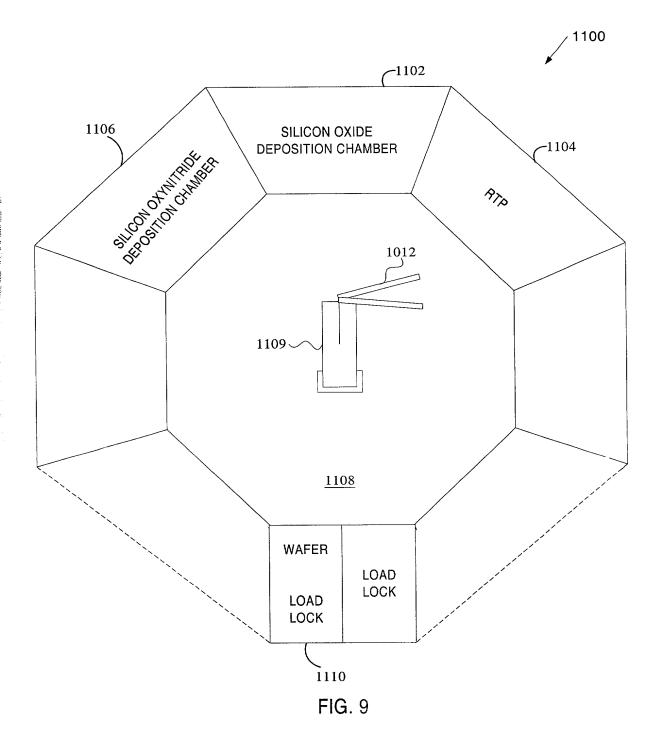
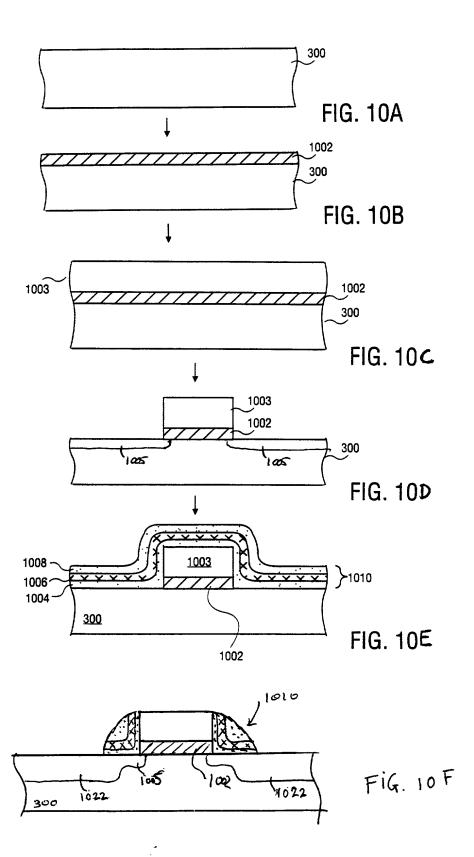
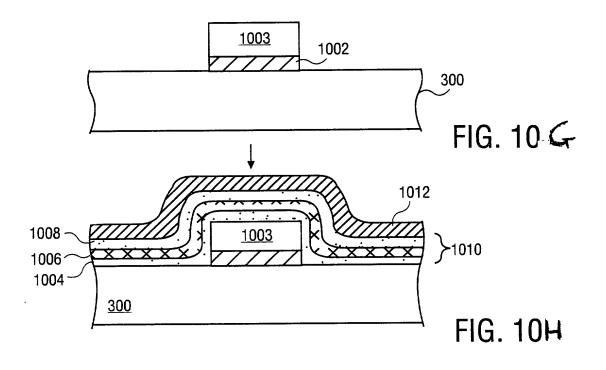
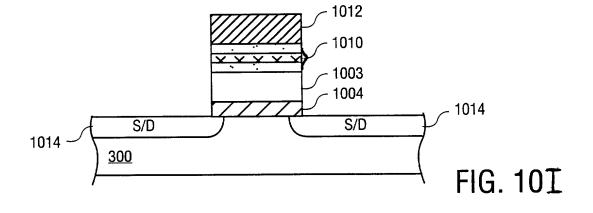


FIG. 8

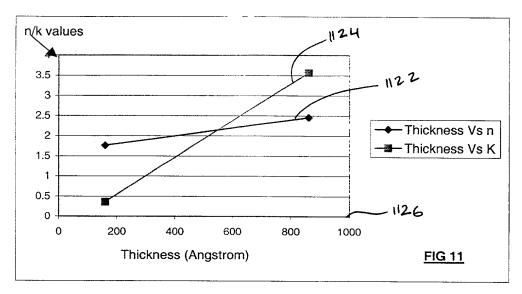


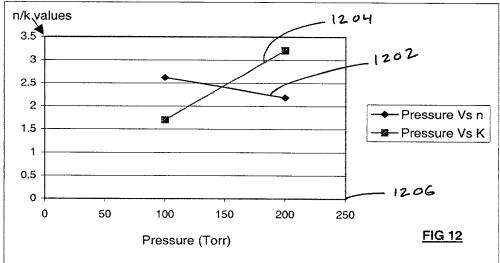


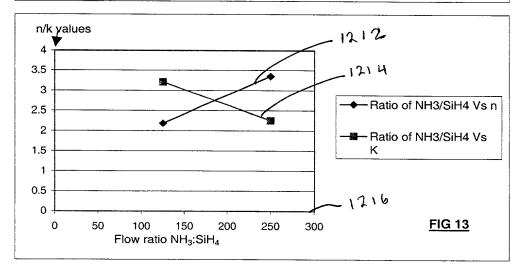




1 × 1 × 1







Step Coverage vs N2O/SiH4 ratio

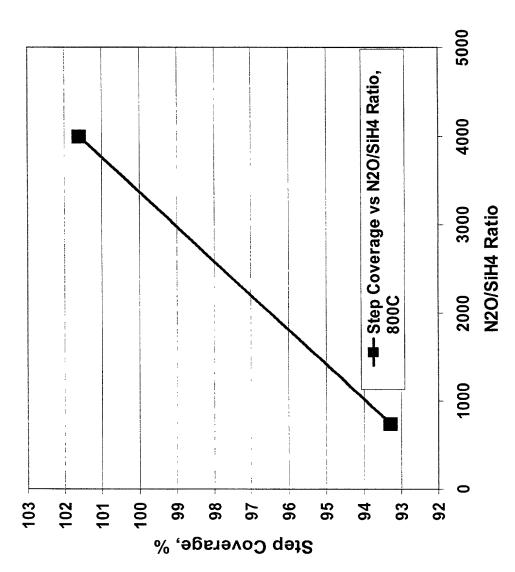
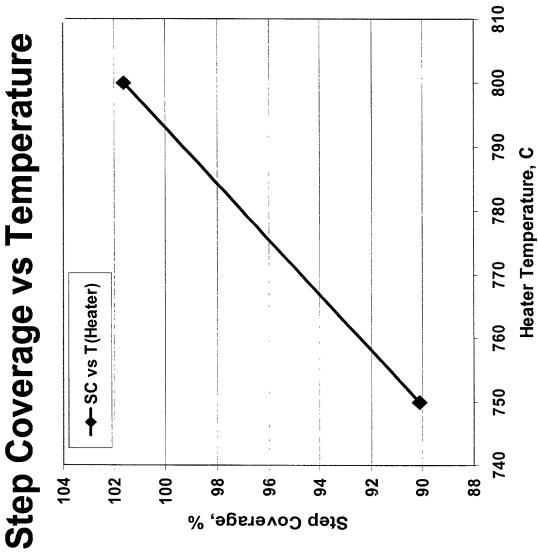


FIG. 14

FIG. 15



T F N S	Pretreatment Time Temperature Pressure N ₂ O into chamber SiH ₄ divert line SiH ₄ into chamber N ₂ into chamber (carrier for SiH ₄) N ₂ into bottom	10 seconds 750 °C 200 Torr 500 secm 1 secm 0 secm 5000 secm	70Å Silicon oxide film 10 seconds 800 °C 200 Torr 1200 sccm 2 sccm 0 sccm	150Å Silicon oxide film 10 seconds 700 °C 200 Torr 1500 sccm 2 sccm	1000Å Silicon oxide film 10 seconds 800 °C 200 Torr 4000 sccm
T T F N	Fime Femperature Pressure N ₂ O into chamber SiH ₄ divert line SiH ₄ into chamber N ₂ into chamber (carrier for SiH ₄)	10 seconds 750 °C 200 Torr 500 sccm 1 sccm 0 sccm	10 seconds 800 °C 200 Torr 1200 sccm 2 sccm 0 sccm	10 seconds 700 °C 200 Torr 1500 sccm	10 seconds 800 °C 200 Torr
F N S S	Pressure N ₂ O into chamber SiH ₄ divert line SiH ₄ into chamber N ₂ into chamber (carrier for SiH ₄)	750 °C 200 Torr 500 sccm 1 sccm 0 sccm	800 °C 200 Torr 1200 sccm 2 sccm 0 sccm	700 °C 200 Torr 1500 sccm	800 °C 200 Torr
F N S S	Pressure N ₂ O into chamber SiH ₄ divert line SiH ₄ into chamber N ₂ into chamber (carrier for SiH ₄)	200 Torr 500 sccm 1 sccm 0 sccm	800 °C 200 Torr 1200 sccm 2 sccm 0 sccm	700 °C 200 Torr 1500 sccm	800 °C 200 Torr
<u>N</u>	N ₂ O into chamber SiH ₄ divert line SiH ₄ into chamber N ₂ into chamber (carrier for SiH ₄)	500 sccm 1 sccm 0 sccm	1200 sccm 2 sccm 0 sccm	200 Torr 1500 sccm	200 Torr
S	SiH ₄ divert line SiH ₄ into chamber N ₂ into chamber (carrier for SiH ₄)	1 sccm 0 sccm	1200 sccm 2 sccm 0 sccm	1500 sccm	
S	SiH ₄ into chamber N ₂ into chamber (carrier for SiH ₄)	0 sccm	0 sccm		1000 50011
N	N ₂ into chamber (carrier for SiH ₄)		0 sccm		20 sccm
	carrier for SiH ₄)	5000 sccm		0 sccm	0 sccm
	N ₂ into bottom		10000 sccm	5000 sccm	10000 sccm
c	chamber	4000 sccm	8000 sccm	4000 sccm	8000 sccm
3		William Care Comments of the C			
	Deposition	, , , , , , , , , , , , , , , , , , ,	A CANADA CALLANDA AND CALLANDA	and the state of t	****
T	Гіте	40 seconds	44 seconds	53.2 seconds	75 seconds
T	Femperature	750 °C	800 °C	750 °C	750 °C
P	Pressure	200 Torr	200 Torr	200 Torr	200 Torr
N	N ₂ O into chamber	500 sccm	1200 sccm	1500 sccm	4000 sccm
S	SiH ₄ divert line	0 sccm	0 sccm	0 sccm	0 sccm
S	SiH ₄ into chamber	1 sccm	2 sccm	2 sccm	20 sccm
	N ₂ into chamber	5000 sccm	10000 sccm	5000 sccm	10000 sccm
	carrier for SiH ₄)				
	N ₂ into bottom	4000 sccm	8000 sccm	4000 sccm	8000 sccm
	hamber				
4					
	Posttreatment				and the second s
	Time	10 seconds	10 seconds	10 seconds	10 seconds
	Temperature	750 °C	800 °C	750 °C	750 °C
	ressure	200 Torr	200 Torr	200 Torr	200 Torr
	N ₂ O into chamber	500 sccm	1200 sccm	1500 sccm	4000 sccm
<u> </u>	SiH ₄ divert line	0 sccm	2 sccm	0 sccm	0 sccm
	iH ₄ into chamber	0 sccm	0 sccm	0 sccm	0 sccm
(0	N ₂ into chamber carrier for SiH ₄)	5000 sccm	10000 sccm	5000 sccm	10000 sccm
cl	N ₂ into bottom hamber	4000 sccm	8000 sccm	4000 sccm	8000 sccm
_					
	urge			mm	1 W. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	ime	10 seconds	10 seconds	10 seconds	10 seconds
	V ₂ into chamber	5000 sccm	10000 sccm	5000 sccm	10000 sccm
	carrier for SiH ₄)				2000 00011
1	2 into bottom	4000 sccm	8000 sccm	4000 sccm	8000 sccm
_ cł	hamber				

TABLE 1: PARAMETERS FOR MAKING SILICON OXIDE FILMS